

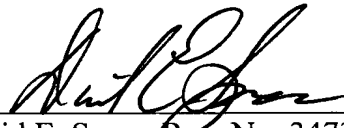
REMARKS

Attached hereto is a marked-up version of the changes made to the application by the present Amendment. If clarification of the amendment or application is desired, or if issues are present which the Examiner believes may be quickly resolved, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0160, our Order No. FRR-12806.

Respectfully submitted,

RANKIN, HILL, PORTER & CLARK LLP

By: 
David E. Spaw, Reg. No. 34732

700 Huntington Building
925 Euclid Avenue
Cleveland, Ohio 44115-1405
(216) 566-9700
Customer No. 007609

Attachment: Marked-up version of Amendments

IN THE CLAIMS:

The claims have been amended as follows:

1. (Amended) ~~[Method]~~ A method for ~~[the]~~ joining ~~[of]~~ bodies (41, 50, 51, 65, 66) by means of thermally melting a joining element (1, 20, 30, 52, 67, 75, 80) ~~[characterised in that]~~, wherein the joining element (1, 20, 30, 52, 67, 75, 80), by means of a directed force (F), acts on a surface (4, 40, 59) of at least one of the bodies (41, 50, 51, 65, 66), penetrates the surface as a result of the directed force (F), and ~~[that]~~, once the surface has been penetrated, a mechanical excitation is generated ~~[in]~~ such ~~[a manner]~~, that during a further penetration of the joining element (1, 20, 30, 52, 67, 75, 80) into the at least one body (41, 50, 51, 65, 66) the advance movement is maintained through the directed force (F) and the melting down is maintained through the mechanical excitation, so that molten material is hydraulically displaceable into the surroundings.

2. (Amended) ~~[Method]~~ The method in accordance with claim 1, ~~[characterised in that]~~ wherein the mechanical excitation is applied after at least one of a predetermined depth of penetration of the joining element (1, 20, 30, 52, 67, 75, 80) into one of the bodies (41, 50, 51, 65, 66) has been achieved ~~[and/or]~~ or after a predetermined load level of the directed force (F) has been reached.

3. (Amended) ~~[Method]~~ The method according to claim 2, ~~[characterised in that]~~ wherein the mechanical excitation takes place by means of ultrasound.

4. (Amended) ~~[Method]~~ The method in accordance with claim 2, ~~[characterised in that]~~ wherein the mechanical excitation takes place by means of rotation.

5. (Amended) ~~[Method]~~ The method according to claim 1, ~~[characterised in that]~~ wherein a secondary movement is superimposed on the penetration of the joining element (1, 20, 30, 52, 67, 75, 80) into one of the bodies (41, 50, 51, 65, 66), ~~[which assists]~~ the secondary movement assisting the penetration.

6. (Amended) ~~[Method]~~ The method in accordance with claim 5, ~~[characterised in that]~~ wherein the secondary movement represents a rotation.

7. (Amended) ~~[Method]~~ The method according to claim 1, ~~[characterised in that]~~ wherein at least two bodies (41, 50, 51, 65, 66) are joined by means of a joining element (1, 20, 30, 52, 67, 75, 80).

8. (Amended) ~~[Method]~~ The method in accordance with claim 7, ~~[characterised in that]~~ wherein, between ~~[the]~~ common surfaces (59, 60) of the bodies to be joined (41, 50, 51, 65, 66), an additional layer made out of a meltable material is present, ~~[which]~~ said additional layer, as a result of the mechanical excitation melts and assists~~[, resp., seals]~~ in sealing the mechanical joint between the bodies (41, 50, 51, 65, 66).

9. (Amended) ~~[Method]~~ The method according to claim 7, ~~[characterised in that]~~ wherein one of the bodies (41, 50, 51, 65, 66) comprises a bore (53) for receiving a joining element (52).

10. (Amended) ~~{Method}~~ The method in accordance with claim 1, ~~{characterised in that}~~ wherein at least one of the bodies to be joined (41, 50, 51, 65, 66) consists of porous material.

11. (Amended) ~~{Joining}~~ A joining element (20) for ~~{utilisation}~~ utilization in the method ~~{in accordance with}~~ of claim 1, ~~{characterised in that}~~ wherein the joining element (20) contains thermo-plastic material, is pin shaped and comprises at least one zone with a smaller cross section and at least one zone with a bigger cross section.

12. (Amended) ~~{Joining}~~ The joining element (20) according to claim 11, ~~{characterised in that}~~ wherein the joining element (20) comprises a round ~~{(20-a)}~~ (20a) and/or a polygonal cross section.

13. (Amended) ~~{Joining}~~ The joining element (20) in accordance with ~~{one of the claims 11 or 12, characterised in that}~~ claim 11, wherein the joining element (20) comprises a pointed or a flattened end for pushing through a surface.

14. (Amended) ~~{Joining}~~ The joining element (20) according to ~~{one of the claims 11 or 12, characterised in that}~~ claim 11, wherein the joining element (20) comprises a sharp edge (23), which increases the cutting effect when pushing through a covering layer (4).

15. (Amended) ~~{Joining}~~ The joining element (20) in accordance with ~~{one of the claims 11 to 14, characterised in that}~~ claim 11, wherein the joining element (20) comprises direction-giving elements for energy in the shape of longitudinally aligned ribs (25).

16. (Amended) ~~[Joining]~~ A joining element (30) for ~~[utilisation]~~ utilization in the method according to claim 1, ~~[characterised in that]~~ wherein the joining element (30) comprises a cylindrical part (31) with a pointed element (32) centrally arranged on the one face of the cylindrical part, and which pointed element is surrounded by a ring of elements (34) arranged in a circle around it.

17. (Amended) ~~[Joining]~~ The joining element (30) in accordance with claim 16, ~~[characterised in that]~~ wherein the elements (34) arranged in a circle comprise edges (35), which serve to push through a surface (40).

18. (Amended) ~~[Joining]~~ The joining element (30) according to ~~[one of the claims 16 or 17, characterised in that]~~ claim 16, wherein the joining element (1, 20, 30, 52, 67, 75, 80) serves for receiving a fixing element or a hinge.

19. (Amended) ~~[Joint]~~ A joint manufactured in accordance with the method according to ~~[one of the claims 1 to 10]~~ claim 1, with one or several joining elements in accordance with ~~[one of the claims 11 to 18, characterised in that]~~ claim 11, wherein melted down material of a joining element (67) is hardened within the structure of a compressed base material of a body (66).

IN THE ABSTRACT:

The Abstract of the Disclosure has been amended as follows:

ABSTRACT OF THE DISCLOSURE

10018625-030702
20200805 09:29:00
A ~~[The invention is related to a]~~ method for ~~[the]~~ joining ~~[of]~~ bodies (41, 50, 51, 65, 66) by ~~[means of the thermal]~~ melting down ~~[of]~~ a joining element (1, 20, 30, 52, 67, 75, 80). The joining element (1, 20, 30, 52, 67, 75, 80) ~~[by means of a directed force (F)]~~ acts on a surface (4, 40, 59) of one of the bodies (41, 50, 51, 65, 66) and penetrates ~~[it]~~ the surface as a result of ~~[the]~~ a directed force (F). In penetrated condition, a mechanical excitation is generated ~~[in]~~ such ~~[a manner,]~~ that during ~~[the]~~ further penetration of the joining element (1, 20, 30, 52, 67, 75, 80) into the one body (41, 50, 51, 65, 66), the advance is maintained through the directed force (F) and the melting down is maintained through the mechanical excitation ~~[and that with this molten]~~. Molten or melted material is hydraulically displaced into the bodies (41, 50, 51, 65, 66).

~~[(Figure 1)]~~